SCHOOLS/LOCAL GOVERNMENT ENERGY MANAGEMENT PROGRAM

For

SEMINOLE INDEPENDENT SCHOOL DISTRICT Seminole, Texas

An Energy Efficient Partnership Service
of
COMPTROLLER of the STATE of TEXAS
STATE ENERGY CONSERVATION OFFICE
111 E. 17th Street
Austin, Texas 78774

Professional Engineering Services By:

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June 25, 2009

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1.0 EXECUTIVE SUMMARY:

This **Energy Efficient Partnership Service** is provided to public school districts and hospitals as a portion of the state's ***Schools/ Local Government Energy Management Program***; a program sponsored by the **State Energy Conservation Office (SECO)**, a division of the **State of Texas Comptroller of Public Accounts**.

State Energy Conservation Office

Program Administrator:	Glenda Baldwin
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The service assists these public, non-profit institutions to take basic steps towards energy efficient facility operation. Active involvement in the partnership from the entire administration and staff within the agencies and institutions is critical in developing a customized blueprint for energy efficiency for their facilities.

In April 2009, **SECO** received a request for technical assistance from *Jesse Greenfield*, Director of Operations for Seminole I.S.D. **SECO** responded by sending ESA **Energy Systems Associates, Inc.**, a registered professional engineering firm, to prepare this preliminary report for the school district. This report is intended to provide support for the district as it determines the most appropriate path for facility renovation, especially as it pertains to the heating and cooling systems around the facility. It is our opinion that significant decreases in annual energy costs, as well as major maintenance cost reductions, can be achieved through the efficiency recommendations provided herein.

This study has focused on energy efficiency and systems operations. To that end, an analysis of the utility usage and costs for **Seminole ISD,** (hereafter known as SISD) was completed by ESA **Energy Systems Associates, Inc**., (hereafter known as *Engineer*) to determine the annual energy cost index (ECI) and energy use index (EUI) for each campus or facility. A complete listing of the Base Year Utility Costs and Consumption is provided in Appendix IV of this report.

Following the utility analysis and a preliminary consultation with a Maintenance Employee for SISD, a walk-through energy analysis was conducted throughout the campus. Specific findings of this survey and the resulting recommendations for both operation and maintenance procedures and cost-effective energy retrofit installations are identified in Section 6.0 of this report.

We estimate that as much as **$54,933** may be saved annually if all recommended projects are implemented. The estimated installed cost of these projects should total approximately **$368,000**, yielding an average simple payback of **7** years.

SUMMARY TABLE:

SUMMARY:	*IMPLEMENTATION COST*	*ESTIMATED SAVINGS*	*SIMPLE PAYBACK*
Lighting	*$149,000*	*$ 24,833*	*6 Years*
DX to HS Admin	*$ 15,000*	*$ 7,500*	*2 Years*
Upgrade BEMS	*$ 204,000*	*$ 22,600*	*9 Years*
TOTAL PROJECTS	*$ 368,000*	*$ 54,933*	*7 Years*

Although additional savings from reduced maintenance expenses are anticipated, these savings projections are not included in the estimates provided above. As a result, the actual Return of Investment (ROI), for this retrofit program should be even faster than noted within these calculations.

Our final "summary" comment is that **SECO** views the completion and presentation of this report as a beginning, rather than an end, of our relationship with **SISD**. We hope to be ongoing partners in assisting you to implement the recommendations listed in this report. Please call us if you have further questions or comments regarding your Energy Management Issues.

*ESA Energy Systems Associates, Inc. James W. Brown (512) 258-0547

2.0 ENERGY ASSESSMENT PROCEDURE:

Involvement in this on-site analysis program was initiated through completion of a Preliminary Energy Assessment Service Agreement. This PEASA serves as the agreement to form a "partnership" between the client and the State Energy Conservation Office (SECO) for the purposes of energy costs and consumption reduction within owned and operated facilities. After receipt of the PEASA, an on-site visit was conducted by the professional engineering firm contracted by SECO to provide service within that area of the state. A summary of the *Partner's* most recent twelve months of utility bills was provided to the engineer for the preliminary assessment of the Energy Performance Indicators. ESA then toured the facilities to evaluate changes in maintenance, operations and/or equipment which would produce potential savings in energy consumption and cost.

SECO assisted Seminole ISD by providing a Utility Data Analysis in 1999. At the time, most of Seminole's facilities were below regional averages for both energy consumption and energy cost per square foot. FJ Young Pre-K demonstrated a higher than average regional cost and the High School was significantly above regional averages for both energy consumption and energy cost. The district was involved in a performance contract at the time of the utility survey.

3.0 CAMPUS DESCRIPTIONS:

Seminole ISD consists of six campuses:

1. FJ Young Pre-K
2. Seminole Primary
3. Seminole Elementary
4. Seminole Jr. High
5. Seminole High School
6. Seminole Technology

High School

The High School is a brick clad structure with a new Duralast roof. The corridors of the school are carpeted, as well as some of the teaching areas, but the majority of the flooring is vinyl tile. Windows are in reasonable shape and the weatherstripping at the facility is in generally good condition.

The HVAC System is a combination of rooftop units in the classroom areas and a central system in the larger areas. The rooftop units are new and were installed at the time the roof was replaced.

Two Trane RTAA 1704 air-cooled chillers serve Trane Type 41 Climate Changer air handlers distributed at the Gym, Administration, Library, Band Hall and the Shop Areas of the building. The chilled water and hot water loop pumps have variable frequency drives installed to adjust the flow of the chilled and hot water to changing demand requirements. At the time of the survey, 0830 hours on a summer morning, both chillers were operating and only administration and custodial personnel were present in the building. This condition suggests that by design the central system is likely operating more hours than would be necessary if the spaces conditioned had more similar occupancy schedules and student occupancy was the primary determinant of choosing to operate the central plant. Of the areas served by the central plant, the Administration area is the zones with the most variance from student occupancy schedules. The Administration area is occupied all year and as it is served by the central plant, the central plant must operate to condition the area even at times no other zone may be occupied. *We recommend the district consider installing a redundant DX system to condition the Administration area at times, like summer vacation, that no other part of the building is occupied.* During student occupied periods, the Administration area could remain served by the central plant and the district would enjoy the efficiency benefits of the central system. During the summer, the central plant could remain off and the district would only have to operate the DX system to keep personnel comfortable.

The redundant system would require a condensing unit be placed on the roof or the exterior of the building and a DX coil to be installed in the existing Administration air handler. The existing Building Energy Management System (BEMS), an old Johnson Controls System that has been converted to ALC, has the ability to switch between operation of the chilled water and redundant DX coils with the proper programming.

The staff also reports that the central plant operates with a cooling temperature setback of 80°F because the wood paneling located in some areas of the building, like the Band Hall, swell if the temperature is allowed to reach about 85°F. *We recommend the district replace the paneling with a new wall covering that does not require the central plant to operate to keep the wall covering in good condition.*

The lighting system is predominantly T12 linear fluorescent fixtures, except for the 2008 addition of the building in which the lighting system consists of T8 fixtures. *We recommend the district renovate the existing T12 system with T8 lamps and electronic ballasts.* The T8 system will provide about 20% more light from the existing fixtures while consuming approximately 18% less energy. The retrofit will also help SISD comply with the lighting renovation directives of House Bill HB3693 passed in June 2007.

Some areas of the building, like the Art Classroom, will require new T8 fixtures as the existing fixtures are not appropriate for a simple lamp and ballast retrofit. The Art Room is currently illuminated with 18 each 2-lamp eight-foot T12 fixtures with the lenses missing.

The main gymnasium has 30 each 250-watt, 26 each 400-watt, and 16 each 1000-watt metal halide fixtures. *We recommend that the district replace the 250-watt fixtures with 4-lamp T5 high-bay linear fluorescent fixtures and the 400-watt fixtures with 6-lamp T5 high-bay linear fluorescent fixtures.* The 1000-watt fixtures can remain but should be limited to game day operation only. These new T5 fixtures do not have the re-strike issue inherent to metal halides so the fixtures may be turned off during inactive periods of the day and no “warm-up” time is required to re-start the fixtures when gym activities resume.
A second gym in the 2008 addition has an additional 40 each 250-watt metal halide fixtures that produce 41 footcandles at the court surface. At some point in the future, we recommend the district replace these fixtures with 4-lamp T5 fixtures as well.

FJ Young Pre-K School

This school's energy management system remains a combination of the older Soladyne system that is present in most of the district's facilities, a Tracer Summit system that serves the Pre-K wing and the ALC System which serves the 2005 cafeteria addition.

The HVAC system is a combination of rooftop units and split systems. The rooftop units in the original 1965 section of the building have not been replaced yet, but are scheduled to be retrofit during the roofing project in the near future.

The lighting system is a combination of T12 and T8 systems depending upon the date of construction of the wing in which the system is installed. The 2005 and 2001 wings are already T8, but the 1965 wing remains T12. *We recommend the district retrofit the existing T12 fixtures with T8 lamps and electronic ballasts.*

The 2005 wing is substantially overlit with its T8 system. The Teacher Workroom for example, demonstrated 98 footcandles at the tabletops in a space that the Illumination Engineering Society of North America (IESNA) would recommend just 50 footcandles. This indicates that some of the areas in this wing have 200% of the illumination levels recommended for the areas. This demonstrates that 200% of the energy that should be required to illuminate the space is being used. *De-lamping and eliminating existing fixtures in these zones will result in significant energy savings for the district and improve the overall quality of light by reducing glare in overlit areas.* The new cafeteria utilizes 8-lamp compact fluorescent fixtures. These lamps have been a source of great frustration for the Maintenance Staff due to the frequency of lamp failures. *We recommend the district replace these fixtures with new T5 high-bay linear fluorescent fixtures.*

Junior High School

Originally constructed in the 1950s as the High School, the current Middle School will be converted next year to Administration, Special Education, Science Academy and Adult Education Center.

Upon inspection, the nature and condition of the systems and equipment at this facility would suggest low performing energy indices. However, this is the only facility in the district operating below regional averages for both energy consumption and energy cost per square foot. Much of the building is not conditioned at all. Conditioned areas are served by air cooled chillers and air handlers that were installed in the late 1980s or early 1990s. Two Williams and Davis boilers, original to the building's construction, are still in operation today. The Auditorium and Gymnasium have incandescent light fixtures; the water heater has no insulation installed on the hot water piping. The shower areas in the dressing rooms near the gym are carpeted and potential sources of indoor air quality issues.

The scope of work that will be performed for the conversion from the Junior High to the new occupants was not known at the time of the survey. We recommend some of the other energy saving recommendations from this report be incorporated into the renovation of this facility as the future work is performed.

Primary School / Elementary School

The Elementary School has buildings that surround buildings associated with the Primary School. The Staff stated that the Primary School is to be demolished in the next couple of years, therefore any significant money should not be invested into the existing systems. There are, however, some low cost maintenance and operation measures that could be incorporated that would save energy and money while the facility remains in operation.

Temperature setpoints in many of the spaces at the time of the survey were well below the target temperatures that should be required by the energy policy. The unoccupied conference room was found to be set at 68°F. The Special Ed classroom was found to be set to 65°F. It was noted during the survey, that lights were left on in several locations that were unoccupied. We recommend the district implement a "Turn Off the Lights" program as described in Appendix VII of this report.

Exterior lights were found to be operating during the middle of the morning. *We recommend they be controlled with a timeclock or photocell to insure night only operation.*

Areas of the facility were found to utilize T12 lighting systems. *We recommend the areas that are to remain in service should be retrofit from T12 lamps and magnetic ballasts to T8 lamps and electronic ballasts.*

Water heaters observed during the survey did not have insulation installed on the hot water lines. The majority of energy losses in a hot water system occur in the piping. *We recommend the insulation at the units be installed to prevent energy losses in the system.*

HVAC equipment is controlled at this location with the Soladyne control system. *We recommend the system be upgraded to the ALC System that is currently operating in other areas of the district.*

4.0 ENERGY PERFORMANCE INDICATORS:

In order to easily assess the *Partner's* energy utilization and current level of efficiency, there are two key "Energy Performance Indicators" calculated within this report.

1. **Energy Utilization Index**

The Energy Utilization Index (EUI) depicts the total annual energy consumption per square foot of building space, and is expressed in "British Thermal Units" (BTU's).

To calculate the EUI, the consumption of electricity and gas are first converted to equivalent BTU consumption via the following formulas:

ELECTRICITY Usage
[Total KWH /yr] x [3413 BTUs/KWH] = __________ BTUs / yr

NATURAL GAS Usage
[Total MCF/yr] x [1,030,000 BTUs/MCF] = ________ BTUs / yr

After adding the BTU consumption of each fuel, the total BTU's are then divided by the building area.

EUI = [Electricity BTU's + Gas BTU's] divided by [Total square feet]

2. **Energy Cost Index**

The Energy Cost Index (ECI) depicts the total annual energy cost per square foot of building space.

To calculate the ECI, the annual costs of electricity and gas are totaled and divided by the total square footage of the facility:

ECI = [Electricity Cost + Gas Cost] divided by [Total square feet]

These indicators may be used to compare the facility's current cost and usage to past years, or to other similar facilities in the area. Although the comparisons will not provide specific reasons for unusual operation, they serve as indicators that problems may exist within the energy consuming systems.

THE CURRENT ENERGY PERFORMANCE INDICATORS FOR :

SEMINOLE ISD

CAMPUS	ENERGY UTILIZATION INDEX (EUI) (Btu/sf-year)	ENERGY COST INDEX (ECI) ($/sf-year)
2008 Seminole ISD Primary School	**71,634**	**$1.23**
Region 17 2006 Average ES:	58,695	$0.58
2008 Seminole ISD FJ Young	**89,473**	**$1.53**
Region 17 2006 Average ES:	58,695	$0.58
2008 Seminole ISD Elementary School	**68,528**	**$1.12**
Region 17 2006 Average ES:	58,695	$0.58
2008 Seminole ISD Junior High	**45,091**	**$0.64**
Region 17 2006 Average JH:	63,130	$0.74
2008 Seminole ISD High School	**89,191**	**$1.31**
Region 17 2006 Average HS:	79,677	$1.04

Comparison: Seminole ISD to Regional Averages: The EUI and ECI for the Seminole facilities are significantly higher than the regional averages at all campuses except for the Junior High School. This building is operating 29% below regional average for the EUI and 14% below regional average for the ECI.

There are a few possible reasons for these conditions:

1. The regional averages used are from 2006 and therefore a portion of the energy price increases experienced from 2006 are not included in the averages, but are represented in the calculations made for the district's 2007-2008 utility billings.

2. It is clear from the energy survey and utility bill analysis that the facilities at SISD are operating more hours per year than would be necessary if student occupancy was the primary consideration for system operation. As can be seen in the month to month listing of energy consumption at each individual facility in Appendix III, June is the highest, or second highest, monthly consumption at every facility in the district. June is a summer vacation month and there should be a significant decrease in the consumption and cost during this month, but it does not occur. July consumptions at the facilities do show a slight drop in consumption and cost, but not to the degree that would be expected given the extremely low occupancy during this time. It is obvious that the energy management systems are not adjusting system operation for low student occupancy periods.

5.0 RATE SCHEDULE ANALYSIS:

ELECTRICITY PROVIDER : Xcel

ELECTRIC UTILITY: Xcel Energy

ELECTRIC RATE: Large School Service

CUSTOMER CHARGE	=	\$15.00 per meter
DEMAND CHARGE:		
Summer Consumption Charge (June through September)	=	\$7.69 per kW
Winter Consumption Charge (October through May)	=	\$6.33 per kW
ENERGY CHARGE:	=	\$0.00417 per kWh
FUEL COST FACTORS (Vary per Month)	=	\$0.046532 per kWh Average

Average Savings for consumption:	**=**	**\$0.0507/kWh**
Average Savings for demand:	**=**	**\$7.69 in summer; \$6.33 in winter**

NATURAL GAS PROVIDER: Atmos

Rate Schedule Unavailable: Average cost per MCF determined from utility billings.

Total Cost of Natural Gas purchased for Seminole ISD:	\$142,654
Total Quantity of Natural Gas purchased for Seminole ISD:	19,036 MCF

Cost / Quantity = Average Unit Cost
\$ 142,654 / 19,036 mcf = **\$7.49 per mcf of natural gas**

6.0 RECOMMENDATIONS:

A. MAINTENANCE AND OPERATIONS PROCEDURES

1. Weather-strip around movable portions of exterior door and operable window frames.
   Stationary sections of window and door frames should be recaulked as needed.
2. Install insulation on hot water piping in hot water systems.
   The majority of energy losses in hot water systems occur in the hot water piping.
3. Implement SECO's Watt Watcher program to turn lights off in unoccupied areas.
   The Watt Watcher program gets the students involved with helping to have lights turned off when not in use. Refer to Appendix VII for more information on the Watt Watcher Program.
4. Implement SECO's "Sleep is Good" program to put monitors and computers in reduced power consumption mode during periods of inactivity.
   The Watt Watcher program gets the students involved with helping to have lights turned off when not in use. Refer to Appendix VII for more information on the Watt Watcher Program.
5. Replace existing wood paneling at High School with alternative wall covering that will not require low temperature setback by central plant.
6. De-lamp and remove fixtures as necessary at FJ Young 2005 wing in spaces overlit according to IESNA recommendations.
7. Install timeclock or photocell control on exterior lights at Elementary School to prevent daytime operation.

B. CAPITAL EXPENSE PROJECTS

I. Complete Lighting Renovation from T12 to T8 system components.

We estimate about 60% of the district has T12 fixtures that need to be renovated with T8 lamps and electronic ballasts. All work at the Primary and Junior High has been excluded since the future demolition and reconstruction plans are unclear at this time. The cost indicated below should complete the lighting retrofit projects described in the report at the High School, Elementary School and FJ Young.

Estimated Installed Cost	=	$149,000
Estimated Energy Cost Savings	=	$ 24,833
Simple Payback Period	=	6 Years

II. Install redundant DX system on existing Administration AHU at High School.

The existing central system is required to operate to condition the Administration area even if it is the only occupied space in the building. The energy savings achieved by turning off the central system at the High School during the unoccupied summer months should pay for the project in less than two years.

Estimated Installed Cost	=	$ 15,000
Estimated Energy Cost Savings	=	$ 7,500
Simple Payback Period	=	2 Years

III. Upgrade Soladyne energy management system to new ALC system operating in other areas of the district.

The High School and the 2005 wing at 2005 Cafeteria addition at FJ Young are the only facilities with the new ALC BEMS. We recommend the systems at the Elementary School and the remaining two systems at FJ Young be upgraded to the ALC System.

Estimated Installed Cost	=	$204,000
Estimated Energy Cost Savings	=	$ 22,600
Simple Payback Period	=	9 Years

SUMMARY TABLE:

SUMMARY:	*IMPLEMENTATION COST*	*ESTIMATED SAVINGS*	*SIMPLE PAYBACK*
Lighting	*$149,000*	*$ 24,833*	*6 Years*
DX to HS Admin	*$ 15,000*	*$ 7,500*	*2 Years*
Upgrade BEMS	*$ 204,000*	*$ 22,600*	*9 Years*
TOTAL PROJECTS	*$ 368,000*	*$ 54,933*	*7 Years*

Financing of these projects may be provided using a variety of methods as Bond Programs, municipal leases, or state financing programs like the SECO LoanSTAR Program.

In-House Funding = $ 368,000

10 year commercial loan principal = $ 368,000
10 year commercial loan interest (5%) paid = $ 100,385
10 year commercial loan TOTAL = $ 468,385

Commercial Loan Annual Payment = $ 3,903/month = $ 46,836/yr
Total Annual Payment Minus Annual Energy Cost Savings = $46,836 – 54,933 = $ -8,097
Annual Savings to ISD (without considering Maintenance Cost Reduction) = $ 8,097

More information regarding financial programs available to SISD can be found in:

APPENDIX I: *SUMMARY OF FUNDING AND PROCUREMENT OPTIONS FOR CAPITAL EXPENDITURE PROJECTS*

APPENDIX I

SUMMARY OF FUNDING AND PROCUREMENT OPTIONS FOR CAPITAL EXPENDITURE PROJECTS

SUMMARY OF FUNDING OPTIONS FOR CAPITAL EXPENDITURE PROJECTS

Several options are available for funding retrofit measures which require capital expenditures.

LoanSTAR Program:
The Texas LoanSTAR program is administered by the State Energy Conservation Office (SECO). It is a revolving loan program available to all public school districts in the state as well as other institutional facilities. SECO loans money at 3% interest for the implementation of energy conservation measures which have a combined payback of eight years or less. The amount of money available varies, depending upon repayment schedules of other facilities with outstanding loans, and legislative actions. Check with Theresa Sifuentes of SECO (512-463-1896) for an up-to-date evaluation of prospects for obtaining a loan in the amounts desired.

TASB (Texas Association Of School Boards) Capital Acquisition Program:
TASB makes loans to school districts for acquiring personal property for "maintenance purposes". Energy conservation measures are eligible for these loans. The smallest loan TASB will make is $100,000. Financing is at 4.4% to 5.3%, depending upon length of the loan and the school district's bond rating. Loans are made over a three year, four year, seven year, or ten year period. The application process involves filling out a one page application form, and submitting the school district's most recent budget and audit. Contact Cheryl Kepp at TASB (512-467-0222) for further information.

Loans On Commercial Market:
Local lending institutions are another source for the funding of desired energy conservation measures. Interest rates obtainable may not be as attractive as that offered by the LoanSTAR or TASB programs, but advantages include "unlimited" funds available for loan, and local administration of the loan.

Leasing Corporations:
Leasing corporations have become increasingly interested in the energy efficiency market. The financing vehicle frequently used is the municipal lease. Structured like a simple loan, a municipal leasing agreement is usually a lease-purchase agreement. Ownership of the financed equipment passes to the district at the beginning of the lease, and the lessor retains a security interest in the purchase until the loan is paid off. A typical lease covers the total cost of the equipment and may include installation costs. At the end of the contract period a nominal amount, usually a dollar, is paid by the lessee for title to the equipment.

Bond Issue:
The may choose to have a bond election to provide funds for capital improvements. Because of its political nature, this funding method is entirely dependent upon the mood of the voters, and may require more time and effort to acquire the funds than the other alternatives.

SUMMARY OF PROCUREMENT OPTIONS FOR CAPITAL EXPENDITURE PROJECTS

State Purchasing:
The General Services Commission has competitively bid contracts for numerous items which are available for direct purchase by school districts. Contracts for this GSC service may be obtained from Sue Jager at (512) 475-2351.

Design/Bid/Build (Competitive Bidding):
Plans and specifications are prepared for specific projects and competitive bids are received from installation contractors. This traditional approach provides the district with more control over each aspect of the project, and task items required by the contractors are presented in detail.

Design/Build:
These contracts are usually structured with the engineer and contractor combined under the same contract to the owner. This type team approach was developed for fast-track projects, and to allow the contractor a position in the decision making process. The disadvantage to the district is that the engineer is not totally independent and cannot be completely focused upon the interest of the district. The district has less control over selection of equipment and quality control.

Purchasing Standardization Method:
This method will result in significant dollar savings if integrated into planned facility improvements. For larger purchases which extend over a period of time, standardized purchasing can produce lower cost per item expense, and can reduce immediate up-front expenditures. This approach includes traditional competitive bidding with pricing structured for present and future phased purchases.

Performance Contracting:
Through this arrangement, an energy service company (ESCO) using in-house or third party financing to implement comprehensive packages of energy saving retrofit projects. Usually a turnkey service, this method includes an initial assessment of energy savings potential, design of the identified projects, purchase and installation of the equipment, and overall project management. The ESCO guarantees that the cost savings generated will, at a minimum, cover the annual payment due over the term of the contract. The laws governing Performance Contracting for school districts are detailed in the Texas Education Code, Subchapter Z, Section 44.901. Senate Bill SB 3035, passed by the seventy-fifth Texas Legislature, amends some of these conditions. Performance Contracting is a highly competitive field, and interested districts may wish to contact Theresa Sifuentes of State Energy Conservation Office, (SECO), at 512-463-1896 for assistance in preparing requests for proposals or requests for qualifications.

Solution Center

How to Finance Your Energy Program

Cost and financing issues are pivotal factors in determining which energy-efficiency measures will be included in your final energy management plan. Before examining financing options, you need to have a reasonably good idea of the measures that may be implemented. For this purpose, you will want to perform cost/benefit analyses on each candidate measure to identify those with the best investment potential. This document presents a brief introduction to cost/benefit methods and then suggests a variety of options for financing your program.

Selecting a Cost/Benefit Analysis Method

Cost/benefit analysis can determine if and when an improvement will pay for itself through energy savings and to help you set priorities among alternative improvement projects. Cost/benefit analysis may be either a simple payback analysis or the more sophisticated life cycle cost analysis. Since most electric utility rate schedules are based on both consumption and peak demand, your analyst should be skilled at assessing the effects of changes in both electricity use and demand on total cost savings, regardless of which type of analysis is used. Before beginning any cost/benefit analyses, you must first determine acceptable design alternatives that meet the heating, cooling, lighting, and control requirements of the building being evaluated. The criteria for determining whether a design alternative is "acceptable" includes reliability, safety, conformance with building codes, occupant comfort, noise levels, and space limitations. Since there will usually be a number of acceptable alternatives for any project, cost/benefit analysis allows you to select those that have the best savings potential.

Simple Payback Analysis

A highly simplified form of cost/benefit analysis is called simple payback. In this method, the total first cost of the improvement is divided by the first-year energy cost savings produced by the improvement. This method yields the number of years required for the improvement to pay for itself.

This kind of analysis assumes that the service life of the energy-efficiency measure will equal or exceed the simple payback time. Simple payback analysis provides a relatively easy way to examine the overall costs and savings potentials for a variety of project alternatives. However, it does not consider a number of factors that are difficult to predict, yet can have a significant impact on cost savings. These factors may be considered by performing a life-cycle cost (LCC) analysis.

Simple Payback

As an example of simple payback, consider the lighting retrofit of a 10,000-square-foot commercial office building. Relamping with T-8 lamps and electronic, high-efficiency ballasts may cost around $13,300 ($50 each for 266 fixtures) and produce annual savings of around $4,800 per year (80,000 kWh at $0.06/kWh). This simple payback for this improvement would be

$$\frac{\$13{,}300}{\$4{,}800/\text{year}} = 2.8 \text{ years}$$

That is, the improvement would pay for itself in 2.8 years, a 36% simple return on the investment (1/2.8 = 0.36).

Life-Cycle Cost Analysis

Life-cycle cost analysis (LCC) considers the total cost of a system, device, building, or other capital equipment or facility over its anticipated useful life. LCC analysis allows a comprehensive assessment of all anticipated costs associated with a design alternative. Factors commonly considered in LCC analyses include initial capital cost, operating costs, maintenance costs, financing costs, the expected useful life of equipment, and its future salvage values. The result of the LCC analysis is generally expressed as the value of initial and future costs in today's dollars, as reflected by an appropriate discount rate.

The first step in this type of analysis is to establish the general study parameters for the

continued

How to Finance Your Energy Program *continued*

project, including the base date (the date to which all future costs are discounted), the service date (the date when the new system will be put into service), the study period (the life of the project or the number of years over which the investor has a financial interest in the project), and the discount rate. When two or more design alternatives are compared (or even when a single alternative is compared with an existing design), these variables must be the same for each to assure that the comparison is valid. It is meaningless to compare the LCC of two or more alternatives if they are computed using different study periods or different discount rates.

Decision makers in both the public and private sectors have long used LCC analysis to obtain an objective assessment of the total cost of owning, operating, and maintaining a building or building system improvement over its useful life. Nevertheless, an LCC analysis does require a good understanding of acceptable alternatives, useful life, equipment efficiencies, and discount rates.

Selecting the "Best" Alternatives

Generally, all project alternatives should be screened using simple payback analyses. A more detailed and costly LCC analysis should be reserved for large projects or those improvements that entail a large investment, since a detailed cost analysis would then be a small part of the overall cost. Both simple payback and LCC analyses will allow you to set priorities based on measures that represent the greatest return on investment. In addition, these analyses can help you select appropriate financing options:

- Energy-efficiency measures with short payback periods, such as one to two years, are economically very attractive and should be implemented using operating reserves or other readily available internal funds, if possible.
- Energy-efficiency measures with payback periods from three to five years may be considered for funding from available internal capital investment monies, or may be attractive candidates for third-party financing through energy service companies or equipment leasing arrangements.
- Frequently, short payback measures can be combined with longer payback measures (10 years or more) in order to increase the number of measures that can be cost-effectively included in a project. Projects that combine short- and long-term paybacks are recommended to avoid "cream-skimming" (implementing only those measures that are highly cost effective and have quick paybacks) at the expense of other worthwhile measures. A selected set of measures with a combination of payback periods can be financed either from available internal funds or through third party alternatives.

If simple payback time is long, 10 or more years, economic factors can be very significant and LCC analysis is recommended. In contrast, if simple payback occurs within three to five years, more detailed LCC analysis may not be necessary, particularly if price and inflation changes are assumed to be moderate.

Weighing Non-Cost Impacts

Some factors related to building heating, air conditioning, and lighting system design are not considered in either simple payback or LCC analyses. Examples include the thermal comfort of occupants in a building and the adequacy of task lighting, both of which affect productivity. A small loss in productivity due to reduced comfort or poor lighting can quickly offset any energy cost savings.

Conventional cost/benefit analyses also normally do not consider the ancillary societal benefits that can result from reduced energy use (e.g., reduced carbon emissions, improved indoor air quality). In some cases, these ancillary benefits can be assigned an agreed upon monetary value, but the values to be used are strongly dependent on local factors. In general, if societal benefits have been assigned appropriate monetary values by a local utility, they can be easily considered in your savings calculations. However, your team should discuss this issue with your local utility or with consultants working on such values in your area.

Finally, in any cost analysis, it can be very important to include avoided cost as part of the benefit of the retrofit. When upgrading or replacing building equipment, the avoided cost of maintaining existing equipment should be considered a cost savings provided by the improvement.

2

How to Finance Your Energy Program *continued*

Financing Mechanisms

Capital for energy-efficiency improvements is available from a variety of public and private sources, and can be accessed through a wide and flexible range of financing instruments. While variations may occur, there are five general financing mechanisms available today for investing in energy-efficiency:

- **Internal Funds.** Energy-efficiency improvements are financed by direct allocations from an organization's own internal capital or operating budget.
- **Debt Financing.** Energy-efficiency improvements are financed with capital borrowed directly by an organization from private lenders.
- **Lease or Lease-Purchase Agreements.** Energy-efficient equipment is acquired through an operating or financing lease with no up-front costs, and payments are made over five to ten years.
- **Energy Performance Contracts.** Energy-efficiency measures are financed, installed, and maintained by a third party, which guarantees savings and payments based on those savings.
- **Utility Incentives.** Rebates, grants, or other financial assistance are offered by an energy utility for the design and purchase of certain energy-efficient systems and equipment.

These financing mechanisms are not mutually exclusive (i.e., an organization may use several of them in various combinations). The most appropriate set of options will depend on the size and complexity of a project, internal capital constraints, in-house expertise, and other factors. Each of these mechanisms is discussed briefly below, followed by some additional funding sources and considerations.

Internal Funds

The most direct way for the owner of a building or facility to pay for energy-efficiency improvements is to allocate funds from the internal capital or operating budget. Financing internally has two clear advantages over the other options discussed below -- it retains internally all savings from increased energy-efficiency, and it is usually the simplest option administratively. The resulting savings may be used to decrease overall operating expenses in future years or retained within a revolving fund used to support additional efficiency investments. Many public and private organizations regularly finance some or all of their energy-efficiency improvements from internal funds.

In some instances, competition from alternative capital investment projects and the requirement for relatively high rates of return may limit the use of internal funds for major, standalone investments in energy-efficiency. In most organizations, for example, the highest priorities for internal funds are business or service expansion, critical health and safety needs, or productivity enhancements. In both the public and private sectors, capital that remains available after these priorities have been met will usually be invested in those areas that offer the highest rates of return. The criteria for such investments commonly include an annual return of 20 percent to 30 percent or a simple payback of three years or less.

Since comprehensive energy-efficiency improvements commonly have simple paybacks of five to six years, or about a 12 percent annual rate of return, internal funds often cannot serve as the sole source of financing for such improvements. Alternatively, however, internal funding can be used well and profitably to achieve more competitive rates of return when combined with one or more of the other options discussed below.

Debt Financing

Direct borrowing of capital from private lenders can be an attractive alternative to using internal funds for energy-efficiency investments. Financing costs can be repaid by the savings that accrue from increased energy-efficiency. Additionally, municipal governments can often issue bonds or other long-term debt instruments at substantially lower interest rates than can private corporate entities. As in the case of internal funding, all savings from efficiency improvements (less only the cost of financing) are retained internally.

Debt financing is administratively more complex than internal funding, and financing costs will vary according to the credit rating of the borrower. This approach may also be restricted by formal debt ceilings imposed by municipal

How to Finance Your Energy Program *continued*

policy, accounting standards, and/or Federal or state legislation.

In general, debt financing should be considered for larger retrofit projects that involve multiple buildings or facilities. When considering debt financing, organizations should weigh the cost and complexity of this type of financing against the size and risk of the proposed projects.

Lease and Lease-Purchase Agreements

Leasing and lease-purchase agreements provide a means to reduce or avoid the high, up-front capital costs of new, energy-efficient equipment. These agreements may be offered by commercial leasing corporations, management and financing companies, banks, investment brokers, or equipment manufacturers. As with direct borrowing, the lease should be designed so that the energy savings are sufficient to pay for the financing charges. While the time period of a lease can vary significantly, leases in which the lessee assumes ownership of the equipment generally range from five to ten years. There are several different types of leasing agreements, as shown in the sidebar. Specific lease agreements will vary according to lessor policies, the complexity of the project, whether or not engineering and design services are included, and other factors.

Energy Performance Contracts

Energy performance contracts are generally financing or operating leases provided by an Energy Service Company (ESCo) or equipment manufacturer. The distinguishing features of these contracts are that they provide a guarantee on energy savings from the installed retrofit measures, and they provide payments to the ESCo from the savings, freeing the customer from any need of up-front payments to the ESCo. The contract period can range from five to 15 years, and the customer is required to have a certain minimum level of capital investment (generally $200,000 or more) before a contract will be considered.

Under an energy performance contract, the ESCo provides a service package that typically includes the design and engineering, financing, installation, and maintenance of retrofit measures to improve energy-efficiency. The scope of these improvements can range from measures that affect a single part of a building's energy-using

Types of Leasing Agreements

Operating Leases are usually for a short term, occasionally for periods of less than one year. At the end of the lease period, the lessee may either renegotiate the lease, buy the equipment for its fair market value, or acquire other equipment. The lessor is considered the owner of the leased equipment and can claim tax benefits for its depreciation.

Financing Leases are agreements in which the lessee essentially pays for the equipment in monthly installments. Although payments are generally higher than for an operating lease, the lessee may purchase the equipment at the end of the lease for a nominal amount (commonly $1). The lessee is considered the owner of the equipment and may claim certain tax benefits for its depreciation.

Municipal Leases are available only to tax-exempt entities such as school districts or municipalities. Under this type of lease, the lessor does not have to pay taxes on the interest portion of the lessee's payments, and can therefore offer an interest rate that is lower than the rate for usual financing leases. Because of restrictions against multi-year liabilities, the municipality specifies in the contract that the lease will be renewed year by year. This places a higher risk on the lessor, who must be prepared for the possibility that funding for the lease may not be appropriated. The lessor may therefore charge an interest rate that is as much as 2 percent above the tax-exempt bond rate, but still lower than rates for regular financing leases. Municipal leases nonetheless are generally faster and more flexible financing tools than tax-exempt bonds.

Guaranteed Savings Leases are the same as financing or operating leases but with the addition of a guaranteed savings clause. Under this type of lease, the lessee is guaranteed that the annual payments for leasing the energy-efficiency improvements will not exceed the energy savings generated by them. The owner pays the contractor a fixed payment per month. If actual energy savings are less than the fixed payment, however, the owner pays only the small amount saved and receives a credit for the difference.

How to Finance Your Energy Program *continued*

infrastructure (such as lighting) to a complete package of measures for multiple buildings and facilities. Generally, the service provider will guarantee savings as a result of improvements in both energy and maintenance efficiencies. Flat-fee payments tend to be structured to maintain a positive cash flow to the customer with whom the agreement is made. With the increasing deregulation of conventional energy utilities, several larger utilities have formed unregulated subsidiaries that offer a full range of energy-efficiency services under performance agreements.

An energy performance contract must define the methodology for establishing the baseline costs and cost savings and for the distribution of those savings among the parties. The contract must also specify how those savings will be determined, and must address contingencies such as utility rate changes and variations in the use and occupancy of a building. While several excellent guidance documents exist for selecting and negotiating energy performance contracts, large or complicated contracts should be negotiated with the assistance of experienced legal counsel.

Utility Incentives

Some utilities still offer financial incentives for the installation of energy-efficient systems and equipment, although the number and extent of such programs appears to be decreasing as utility deregulation proceeds. These incentives are available for a variety of energy-efficient products including lighting, HVAC systems, energy management controls, and others. The most common incentives are equipment rebates, design assistance, and low-interest loans.

In general, the primary purpose of utility incentives is to lower peak demand; overall energy-efficiency is an important, but secondary consideration. Incentives are much more commonly offered by electric utilities than by natural gas utilities.

Additional Financing Sources and Considerations

State and Federal Assistance. Matching grants, loans, or other forms of financial assistance (in addition to those listed above) may be available from the Federal government or state governments. If your community is considering energy-efficiency improvements for public or assisted multifamily housing, your program could be eligible to receive assistance through various programs of the U.S. Department of Housing and Urban Development. A variety of state-administered programs for building efficiency improvements may also be available, some of which are funded through Federal block grants and programs. Federal assistance available through states include Federal block grants and State Energy Conservation Program funds. An example of individual state programs is the Texas LoanSTAR program, which provides low-interest loans for state agencies and schools.

Utility Assistance

Equipment Rebates. Some utilities offer rebates on the initial purchase price of selected energy-efficient equipment. The amount of the rebate varies substantially depending on the type of equipment. For example, a rebate of $.50 to $1 may be offered for the replacement of an incandescent bulb with a more efficient fluorescent lamp, while the installation of an adjustable speed drive may qualify for a rebate of $10,000 or more.

Design Assistance. A smaller number of utilities provide direct grants or financial assistance to architects and engineers for incorporating energy-efficiency improvements in their designs. This subsidy can be based on the square footage of a building, and/or the type of energy-efficiency measures being considered. Generally, a partial payment is made when the design process is begun, with the balance paid once the design has been completed and installation has commenced.

Low-Interest Loans. Loans with below-market rates are provided by other utilities for the purchase of energy-efficient equipment and systems. Typically, these low-interest loans will have an upper limit in the $10,000 to $20,000 range, with monthly payments scheduled over a two- to five-year period.

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How to Finance Your Energy Program *continued*

Bulk Purchasing. Large organizations generally have purchasing or materials procurement departments that often buy standard materials in bulk or receive purchasing discounts because of the volume of their purchases. Such organizations can help reduce the costs of energy-efficiency renovations if their bulk purchasing capabilities can be used to obtain discounts on the price of materials (e.g., lamps and ballasts). While some locales may have restrictions that limit the use of this option, some type of bulk purchasing can usually be negotiated to satisfy all parties involved.

Project Transaction Costs. Certain fixed costs are associated with analyzing and installing energy measures in each building included in a retrofit program. Each additional building, for example, could represent additional negotiations and transactions with building owners, building analysts, energy auditors, equipment installers, commissioning agents, and other contractors. Similarly, each additional building will add to the effort involved in initial data analysis as well as in tracking energy performance after the retrofit. For these reasons, it is often possible to achieve target energy savings at lower cost by focusing only on those buildings that are the largest energy users. One disadvantage with larger buildings is that the energy systems in the building can be more difficult to understand, but overall, focusing on the largest energy users is often the most efficient use of your financial resources.

Direct Value-Added Benefits. The primary value of retrofits to buildings and facilities lies in the reduction of operating costs through improved energy-efficiency and maintenance savings. Nevertheless, the retrofit may also directly help address a variety of related concerns, and these benefits (and avoided costs) should be considered in assessing the true value of an investment. A few examples of these benefits include the improvement of indoor air quality in office buildings and schools; easier disposal of toxic or hazardous materials found in energy-using equipment; and assistance in meeting increasingly stringent state or Federal mandates for water conservation. Effective energy management controls for buildings can also provide a strong electronic infrastructure for improving security systems and telecommunications.

Economic Development Benefits. In addition to direct savings on operating costs and the added-value benefits mentioned above, investments in energy-efficiency can also support a community's economic development and employment opportunities. Labor will typically constitute about 60 percent of a total energy investment, and about 50 percent of equipment can be expected to be purchased from local equipment suppliers; as a result, about 85 percent of the investment is retained within the local economy. Additionally, funds retained in urban areas will generally be re-spent in the local economy. The Department of Commerce estimates that each dollar retained in an urban area will be re-spent three times. This multiplier effect results in a three-fold increase in the economic benefits of funds invested in energy-efficiency, without even considering the savings from lower overall fuel costs.

For more information contact the Rebuild America Clearinghouse at 252-459-4664 or visit www.rebuild.gov

Rebuild America
U.S. Dept. of Energy

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APPENDIX II

ELECTRIC UTILITY RATE SCHEDULE

Xcel Energy SOUTHWESTERN PUBLIC SERVICE

Section No. IV
Sheet No. IV-182
Revision No. 1 T

Page 1 of 2

ELECTRIC TARIFF

LARGE SCHOOL SERVICE

APPLICABLE: To all public and private schools supplied electric service at secondary voltage and at one point of delivery, and measured through one meter, where facilities of adequate capacity and suitable voltage are adjacent to the premises to be served, in excess of 10 kW of demand in any month.

Not applicable to temporary, breakdown, standby, supplementary, resale or shared service, or to service for which a specific rate schedule is provided.

TERRITORY: Texas service territory.

RATE: Service Availability Charge: $15.00 per month

Energy Charge: 0.417¢ per kWh for all kWh used during the month

Demand Charge:
$7.69 per kW of demand used per month during each summer month
$6.33 per kW of demand used per month during each winter month

PUBLIC UTILITY COMMISSION OF TEXAS
INTERIM APPROVAL GRANTED
APR -2 '08 DOCKET 35407
TF #______ BY______
TARIFF CLERK

WINTER MONTHS: The billing months of October through May.

SUMMER MONTHS: The billing months of June through September.

DEMAND: The Company will furnish at its expense the necessary metering equipment to measure the customer's kW demand for the 30-minute period of greatest use during the month. In the absence of a demand meter the Company will bill the customer's demand using the monthly kilowatt-hours and an average load factor of 41.30 percent. In no month, shall the billing demand be greater than the kW value determined by dividing the kWh sales for the billing period by 80 hours. T T

POWER FACTOR: Applicable to customers on this rate schedule with a peak demand of 200 kW or greater. Customer, at all times, will maintain at Company's point of delivery a power factor of not less than 90% lagging.

In the event a low voltage condition due to lagging power factor exists in a degree sufficient to impair the Company's service, customer will install suitable capacitor or other equipment necessary to raise the overall power factor at the point of delivery to a satisfactory value. Where such power factor correction equipment is used, customer will install and maintain a relay, switch, or other regulating equipment for purpose of disconnecting or controlling the power factor correction equipment in order to prevent excessive voltage variations on Company's lines.

FUEL COST RECOVERY AND ADJUSTMENTS: The charge per kilowatt hour of the above rate shall be increased by the applicable fuel cost recovery factor per kilowatt hour as provided in PUCT Sheet IV-69. This rate schedule is subject to other applicable rate adjustments as in effect from time to time in this tariff.

PUBLIC UTILITY COMMISSION OF TEXAS

PRESIDENT & CEO,
SOUTHWESTERN PUBLIC SERVICE COMPANY

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Xcel Energy
SOUTHWESTERN PUBLIC SERVICE

Section No. IV
Sheet No. IV-182
Revision No. 1 T

Page 2 of 2

ELECTRIC TARIFF

LARGE SCHOOL SERVICE

CHARACTER OF SERVICE: A-C; 60 hertz; single or three phase, at one available standard voltage.

LINE EXTENSIONS: The Company will make line extensions in accordance with its standard line extension policy.

TERMS OF PAYMENT: Net in 16 days after mailing date; 5 percent added to bill after 16 days. If the sixteenth day falls on a holiday or weekend, the due date will be the next work day.

FRANCHISE FEE: All current and future franchise fees not included in base rates shall be separately assessed in the municipality where the excess franchise fee is authorized. Bills computed under the above rate will be increased by the additional franchise fees imposed by the appropriate municipality or taxing authority in which jurisdiction the customer's consuming facility resides, when applicable. The franchise fee will appear on the bill as a separate item.

RULES, REGULATIONS AND CONDITIONS OF SERVICE: Service supplied under this schedule is subject to the terms and conditions set forth in the Company's Rules, Regulations and Conditions of Service on file with The Public Utility Commission of Texas and the following conditions:

For those customers receiving secondary service distribution voltage who desire to elect primary distribution voltage, they may do so subject to the terms and conditions of Primary/Secondary Conversion. T

PUBLIC UTILITY COMMISSION OF TEXAS
INTERIM APPROVAL GRANTED
APR -2 '08 DOCKET 35407
TF #______ BY______
TARIFF CLERK

PUBLIC UTILITY COMMISSION OF TEXAS

PRESIDENT & CEO,
SOUTHWESTERN PUBLIC SERVICE COMPANY

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FCASUM08.xls Summary 1/8/2009 9:36 AM

SOUTHWESTERN PUBLIC SERVICE COMPANY
CALCULATED AS OF NOVEMBER 2008

FUEL COST FACTORS BY $/KWH

	Jan-08	Feb-08	06-Feb-08	Mar-08	Apr-08	May-08	Jun-08	Jul-08	Aug-08	Sep-08	14-Sep-08	16-Sep-08	Oct-08	Nov-08	Dec-08
#01															
#02															
#03	0.040398	0.040398	0.041422	0.041422	0.041422	0.053034	0.053034	0.053034	0.053034	0.053034	0.053034	0.053034	0.053034	0.044076	0.044076
#04															
#05	0.039847	0.039847	0.040892	0.040892	0.040892	0.052355	0.052355	0.052355	0.052355	0.052355	0.052355	0.052355	0.052355	0.043512	0.043512
#06	(0.001098)	0.000173	0.000173	0.000317	0.000245	(0.000164)	(0.000053)	0.000298	0.000749	0.001417	0.001417	0.001417	0.000221	0.000787	0.000802
#07	0.038140	0.038140	0.038323	0.038323	0.038323	0.049066	0.049066	0.049066	0.049066	0.049066	0.049066	0.049066	0.049066	0.040778	0.040778
#08															
#09	0.037924	0.037924	0.038049	0.038049	0.038049	0.048715	0.048715	0.048715	0.048715	0.048715	0.048715	0.048715	0.048715	0.040487	0.040487
#10															
#11															
#12												(0.006916)	(0.013046)	(0.011120)	(0.010709)
#12 True-Up												(0.004076)	(0.002641)		
#13	0.036031	0.040013	0.040013	0.051973	0.055066	0.051590	0.060490	0.058013	0.049863	0.035513	0.035513				
#13 True-Up	0.002720	0.001448	0.001448	0.000908	0.000844	0.005893	0.001636	0.007537	(0.001171)	(0.004466)	(0.004466)				
#14	(0.006058)	(0.001740)	(0.001740)	0.010292	0.017487	0.014149	0.023000	0.017854	0.009957	(0.004215)	(0.004215)	(0.004215)	(0.010345)	(0.008419)	(0.008008)
#14 True-Up	0.003375	0.001486	0.001486	0.001593	0.001332	0.005856	0.001850	0.007417	(0.001120)	(0.004076)	(0.004076)	(0.004076)	(0.002641)		
#15	(0.001415)	0.002773	0.002773	0.014442	0.017487	0.014149	0.023000	0.020633	0.012736	(0.001436)	(0.001436)				
#15 True-Up	0.003311	0.001478	0.001478	0.001577	0.001398	0.005940	0.001791	0.007371	(0.001130)	(0.004201)	(0.004201)				
#16	(0.005745)	(0.001557)	(0.001557)	0.010112	0.013157	0.009819	0.018670	0.016303	0.008406	(0.001436)	(0.001436)	(0.001436)	(0.007566)	(0.005640)	(0.005229)
# 16 True-Up	0.003311	0.001478	0.001478	0.001577	0.001398	0.005940	0.001791	0.007371	(0.001130)	(0.004201)	(0.004201)	(0.004201)	(0.002672)		
#17	0.036309	0.040322	0.040322	0.052374	0.055490	0.051987	0.060956	0.058460	0.050247	0.035787	0.035787	0.035787	0.029589	0.031467	0.031748
#17 True-Up	0.002307	(0.000284)	(0.000284)	0.000675	0.000357	0.005917	0.000347	0.005539	0.000198	(0.002039)	(0.002039)	(0.002039)	(0.000567)	(0.005885)	
#18	0.039847	0.039847	0.040892	0.040892	0.040892	0.052355	0.052355	0.052355	0.052355	0.052355	0.052355	0.052355	0.052355	0.043512	0.043512
#19	0.015242	0.015242	0.016287	0.016287	0.016287	0.027750	0.027750	0.027750	0.027750	0.027750	0.027750	0.027750	0.027750	0.018907	0.018907
#20	0.021808	0.027101	0.027101	0.015024	0.011262	0.029354	0.035856	0.031906	0.033482	0.058688	0.058688	0.058688	0.046759	0.022508	0.024104
#21	0.029092	0.026841	0.026841	0.009601	0.015915	0.025548	0.039085	0.038494	0.060620	0.055198	0.033701	0.033701	0.000392	(0.029058)	(0.019458)
#22															
#23															
#24															
#25															
#26															
#29	0.035005	0.031512	0.031512	0.030508	0.031091	0.043370	0.045288	0.047438	0.049971	0.053538	0.053538	0.053538	0.042958	0.030307	0.024040
#30	0.038566	0.035834	0.035834	0.049810	0.056599	0.054293	0.052173	0.072703	0.062940	0.042284	0.042284	0.042284	0.034750	0.030878	0.024040

#01	----------	#10	----------	#19	JM Huber (Engineered Carbons) Credit Factor
#02	----------	#11	----------	#20	JM Huber (Engineered Carbons) Excess Power Credit Factor
#03	Texas Retail Secondary	#12	WTMPA, Tri-County, Full Requirements	#21	New Mexico Retail #1957
#04	----------	#13	WTMPA, Tri-County - ended 9-15-08	#22	---------
#05	Texas Retail Primary	#14	Golden Spread	#23	---------
#06	Celanese - CZ #2	#15	Full Requirements - ended 9-15-08	#24	---------
#07	Texas Retail Sub-Transmission	#16	PNM Interruptible	#25	---------
#08	----------	#17	EPE	#26	---------
#09	Texas Retail Backbone Transmission	#18	JM Huber (Engineered Carbons) Fuel Factor - Rate 733	#29	USDA Experiment Credit
				#30	Wind Power Generation Credit

APPENDIX III

UTILITIES CONSUMPTION HISTORY

OWNER:	Seminole ISD				BUILDING:	Primary School		
MONTH / YEAR		ELECTRIC					NAT'L GAS / FUEL	
			DEMAND					
MONTH	YEAR	CONSUMPTION KWH	METERED KW/KVA	CHARGED KW/KVA	COST OF DEMAND	TOTAL ALL ELECTRICAL COSTS $	CONSUMPTION MCF	$ COSTS
JANUARY	2009	40,300	138	138	874	3,090	411	$2,932
FEBRUARY	2009	44,900	143	143	942	3,395	273	$1,858
MARCH	2009	64,800	288	288	2,051	4,527	145	$1,093
APRIL	2009	39,000	180	180	1,282	2,568	46	$355
MAY	2009	57,100	240	240	1,709	3,573	2	$116
JUNE	2008	61,200	260	260	1,799	5,644	1	$54
JULY	2008	45,000	156	156	1,200	4,023	1	$65
AUGUST	2008	51,500	201	201	1,546	4,780	2	$125
SEPTEMBER	2008	78,600	249	249	1,915	6,829	2	$126
OCTOBER	2008	59,600	222	222	1,561	5,350	26	$266
NOVEMBER	2008	45,900	195	195	1,234	4,011	179	$1,386
DECEMBER	2008	46,800	143	143	905	3,460	351	$2,928
TOTAL		634,700	2,415	2,415	17,018	$51,250	1,439	$11,304

				Energy Use Index:		
Annual Total Energy Cost =	$62,554	Per Year		Total Site BTU's/yr	71,634	BTU/s.f.yr
				Total Area (sq.ft.)		
Total KWH x 0.003413 =	2,166.23	x 106				
Total MCF x 1.03 =	1,482.17	x 106		Energy Cost Index:		
Total Other x ____		x 106		Total Energy Cost/yr	$1.23	$/s.f. yr
Total Site BTU's/yr	3,648.40	x 106		Total Area (sq.ft.)		
Floor area:	50,931	s.f.				
Electric Utility	Account #	Meter#		Gas Utility	Account #	
Xcell Energy	2495	Multiple		Atmos	Multiple	

OWNER:	Seminole ISD				BUILDING:	FJ Young		
MONTH / YEAR		ELECTRIC					NAT'L GAS / FUEL	
			DEMAND					
MONTH	YEAR	CONSUMPTION KWH	METERED KW/KVA	CHARGED KW/KVA	COST OF DEMAND	TOTAL ALL ELECTRICAL COSTS $	CONSUMPTION MCF	$ COSTS
JANUARY	2009	53,100	207	207	1,310	4,241	413	$2,947
FEBRUARY	2009	60,300	204	204	1,343	4,638	286	$1,941
MARCH	2009	57,900	228	228	1,623	4,022	165	$1,207
APRIL	2009	53,700	222	222	1,581	3,334	98	$636
MAY	2009	73,200	297	297	2,115	4,493	40	$279
JUNE	2008	74,100	297	297	2,055	6,703	25	$445
JULY	2008	57,300	192	192	1,476	5,065	266	$3,629
AUGUST	2008	57,000	225	225	1,730	5,309	23	$310
SEPTEMBER	2008	92,700	339	339	2,607	8,411	39	$447
OCTOBER	2008	78,300	300	300	2,110	7,087	71	$549
NOVEMBER	2008	63,000	261	261	4,652	5,454	179	$1,381
DECEMBER	2008	63,900	213	213	1,348	4,841	341	$2,840
TOTAL		784,500	2,985	2,985	23,950	$63,598	1,946	$16,611

				Energy Use Index:		
Annual Total Energy Cost =	$80,209	Per Year		Total Site BTU's/yr	89,473	BTU/s.f.yr
				Total Area (sq.ft.)		
Total KWH x 0.003413 =	2,677.50	x 106				
Total MCF x 1.03 =	2,004.38	x 106		Energy Cost Index:		
Total Other x ____		x 106		Total Energy Cost/yr	$1.53	$/s.f. yr
Total Site BTU's/yr	4,681.88	x 106		Total Area (sq.ft.)		
Floor area:	52,327	s.f.				
Electric Utility	Account #	Meter#		Gas Utility	Account #	
Xcell Energy	401	Multiple		Atmos	Multiple	

OWNER:	Seminole ISD			BUILDING:	Elementary School		
MONTH / YEAR		ELECTRIC				NAT'L GAS / FUEL	
			DEMAND				
		CONSUMPTION	METERED	CHARGED	COST OF	TOTAL ALL ELECTRICAL	CONSUMPTION	$
MONTH	YEAR	KWH	KW/KVA	KW/KVA	DEMAND	COSTS $	MCF	COSTS
JANUARY	2009	71,400	284	284	1,798	5,741	554	$3,866
FEBRUARY	2009	72,150	294	294	1,973	5,922	420	$2,744
MARCH	2009	64,800	288	288	2,051	4,527	237	$1,628
APRIL	2009	69,000	291	291	2,072	4,319	133	$776
MAY	2009	84,300	350	350	2,492	5,230	73	$388
JUNE	2008	87,000	335	335	2,409	7,861	29	$445
JULY	2008	72,300	225	225	1,730	6,251	29	$428
AUGUST	2008	75,450	291	291	2,238	6,968	42	$422
SEPTEMBER	2008	97,950	369	369	2,838	8,972	85	$786
OCTOBER	2008	85,800	336	336	2,289	7,760	106	$710
NOVEMBER	2008	70,200	291	291	1,842	5,947	286	$2,092
DECEMBER	2008	74,550	314	314	1,988	6,096	505	$4,105
TOTAL		924,900	3,668	3,668	25,720	$75,594	2,499	$18,390

				Energy Use Index:			
Annual Total Energy Cost =		$93,984	Per Year		Total Site BTU's/yr		68,528	BTU/s.f.yr
				Total Area (sq.ft.)			
Total KWH x 0.003413 =		3,156.68	x 106				
Total MCF x 1.03 =		2,573.97	x 106	Energy Cost Index:			
Total Other x ____			x 106	Total Energy Cost/yr		$1.12	$/s.f. yr
Total Site BTU's/yr		5,730.65	x 106	Total Area (sq.ft.)			
Floor area:		83,625	s.f.				
Electric Utility		Account #	Meter#	Gas Utility	Account #		
Xcell Energy		2501	Multiple	Atmos	Multiple		

OWNER:	Seminole ISD			BUILDING:	Junior High		
MONTH / YEAR		ELECTRIC				NAT'L GAS / FUEL	
			DEMAND				
		CONSUMPTION	METERED	CHARGED	COST OF	TOTAL ALL ELECTRICAL	CONSUMPTION	$
MONTH	YEAR	KWH	KW/KVA	KW/KVA	DEMAND	COSTS $	MCF	COSTS
JANUARY	2009	55,600	215	215	1,361	4,443	1,177	$8,362
FEBRUARY	2009	64,520	224	224	1,472	5,018	797	$5,369
MARCH	2009	62,880	230	230	1,638	4,278	340	$2,639
APRIL	2009	55,720	219	219	1,559	3,398	276	$1,763
MAY	2009	72,400	325	325	2,314	4,702	32	$303
JUNE	2008	82,520	343	343	2,370	7,562	33	$713
JULY	2008	71,880	259	259	1,992	6,510	20	$530
AUGUST	2008	54,000	194	194	1,492	4,878	23	$468
SEPTEMBER	2008	85,680	351	351	2,700	8,089	40	$614
OCTOBER	2008	71,320	287	287	2,024	6,579	66	$679
NOVEMBER	2008	56,520	238	238	1,506	4,940	418	$3,250
DECEMBER	2008	62,720	220	220	1,393	4,842	869	$7,939
TOTAL		795,760	3,105	3,105	21,821	$65,239	4,091	$32,629

				Energy Use Index:			
Annual Total Energy Cost =		$97,868	Per Year		Total Site BTU's/yr		45,091	BTU/s.f.yr
				Total Area (sq.ft.)			
Total KWH x 0.003413 =		2,715.93	x 106				
Total MCF x 1.03 =		4,213.73	x 106	Energy Cost Index:			
Total Other x ____			x 106	Total Energy Cost/yr		$0.64	$/s.f. yr
Total Site BTU's/yr		6,929.66	x 106	Total Area (sq.ft.)			
Floor area:		153,682	s.f.				
Electric Utility		Account #	Meter#	Gas Utility	Account #		
Xcell Energy		8659, 5269	Multiple	Atmos	Multiple		

OWNER:	Seminole ISD				BUILDING:	High School		
MONTH / YEAR		ELECTRIC					NAT'L GAS / FUEL	
			DEMAND					
		CONSUMPTION	METERED	CHARGED	COST OF	TOTAL ALL ELECTRICAL	CONSUMPTION	$
MONTH	YEAR	KWH	KW/KVA	KW/KVA	DEMAND	COSTS $	MCF	COSTS
JANUARY	2009	212,000	632	632	4,001	15,539	1,735	$11,986
FEBRUARY	2009	205,600	612	612	3,991	15,154	1,371	$8,835
MARCH	2009	207,200	652	652	4,642	13,420	869	$5,748
APRIL	2009	196,000	652	652	4,642	10,922	583	$913
MAY	2009	229,200	852	852	6,066	13,436	198	$913
JUNE	2008	268,800	872	872	5,994	22,768	268	$3,698
JULY	2008	249,200	852	852	6,552	22,114	242	$3,203
AUGUST	2008	246,000	780	780	5,998	21,346	226	$2,014
SEPTEMBER	2008	282,400	804	804	6,183	23,777	278	$2,459
OCTOBER	2008	248,800	820	820	5,838	21,537	542	$3,412
NOVEMBER	2008	213,600	720	720	4,558	17,390	1,162	$7,746
DECEMBER	2008	221,200	636	636	4,026	16,024	1,587	$12,793
TOTAL		**2,780,000**	**8,884**	**8,884**	**62,491**	**$213,427**	**9,061**	**$63,720**

					Energy Use Index:			
Annual Total Energy Cost =		$277,147	Per Year		Total Site BTU's/yr		89,191	BTU/s.f.yr
					Total Area (sq.ft.)			
Total KWH x 0.003413 =		9,488.14	x 106					
Total MCF x 1.03 =		9,332.83	x 106		**Energy Cost Index:**			
Total Other x ____			x 106		Total Energy Cost/yr		$1.31	$/s.f. yr
Total Site BTU's/yr		18,820.97	x 106		Total Area (sq.ft.)			
Floor area:		211,018	s.f.					
Electric Utility		**Account #**	**Meter#**		**Gas Utility**	**Account #**		
Xcell Energy		409	Multiple		Atmos	Multiple		

APPENDIX IV

ENERGY POLICY

ENERGY POLICY

[Name of Institution]

Recognizing our responsibility as Trustees of ______________________________,
we believe that every effort should be made to conserve energy and natural resources. As a result, we are establishing this Energy Management Policy which shall be implemented within each of our facilities. We believe that this policy will be beneficial for taxpayers and community residents in the prudent management of our financial and energy resources.

The fulfillment of this policy shall be the joint responsibility of the trustees, administrators, staff and support personnel. The success of the policy is dependent upon total cooperation from all levels within the system.

The board will designate an Energy Manager to coordinate and implement the overall Energy Policy. The Energy Manager will also maintain accurate records of energy consumption and cost on a monthly and annual basis. Energy audits will be conducted annually at each facility and recommendations will be made for updating and improving the energy program. Energy efficiency guidelines and procedures will be reviewed and accepted or rejected by the board. In addition, the procedures required for implementation of the program, and the results achieved from its administration, will be published for administrative and staff information.

Adopted this_________day of _________________________, 200 .

____
President, Board of Trustees

Attest: ______________________________
Secretary, Board of Trustees

APPENDIX V

Preliminary Energy Assessment Service Agreement

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Service Agreement

Investing in our communities through improved energy efficiency in public buildings is a win-win opportunity for our communities and the State. Energy-efficient buildings reduce energy costs, increase available capital, spur economic growth, and improve working and living environments. The Preliminary Energy Assessment Service provides a viable strategy to achieve these goals.

Description of the Service

The State Energy Conservation Office (SECO) will analyze electric, gas and other utility data and work with SEMINOLE ISD , hereinafter referred to as Partner, to identify energy cost-savings potential. To achieve this potential, SECO and Partner have agreed to work together to complete an energy assessment of mutually selected facilities.

SECO agrees to provide this service at no cost to the Partner with the understanding that the Partner is ready and willing to consider implementing the energy savings recommendations.

Principles of the Agreement

Specific responsibilities of the Partner and SECO in this agreement are listed below.

- Partner will select a contact person to work with SECO and its contractor to establish an Energy Policy and set realistic energy efficiency goals.
- SECO's contractor will go on site to provide walk through assessments of selected facilities. SECO will provide a report which identifies no cost/low cost recommendations, Capital Retrofit Projects, and potential sources of funding. Portions of this report may be posted on the SECO Website.
- Partner will schedule a time for SECO's contractor to make a presentation of the assessment findings and recommendations to key decision makers.

Acceptance of Agreement

This agreement should be signed by your organization's chief executive officer or other upper management staff.

Signature: [signature]	Date: 6/17/09
Name (Mr./Ms./Dr.) Jesse Greenfield	Title: Director of Operations
Organization: Seminole ISD	Phone: 432-758-3662
Street Address: 207 S.W. 6th	Fax: 432-758-6249
Mailing Address: 207 S.W. 6th	EMail: jgreenfield@seminole.k12.tx.us
Seminole, Tx. 79360	County Gaines

CONTACT INFORMATION:

Name (Mr./Ms./Dr.): Jesse Greenfield	Title: Director of Operations
Phone: 432-758-3662	Fax: 432-758-6249
E-Mail: jgreenfield@seminole.k12.tx.us	County Gaines

Please sign & **FAX** or mail to Glenda Baldwin at State Energy Conservation Office. **FAX: 512-475-2569**
Address: LBJ State Office Building, 111 E. 17th Street, Austin, Texas 78774. Phone: 512-463-1731
AND also, please fax a copy to your SECO Contractor: ESA Energy Systems Associates, Inc.; Attn: Yvonne Huneycutt **FAX: 512-388-3312** Phone: 512-258-0547 x124

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APPENDIX VI

AMORTIZATION SCHEDULE

Loan Amortization Schedule

	Enter values
Loan amount	$ 368,000.00
Annual interest rate	5.00 %
Loan period in years	10
Number of payments per year	12
Start date of loan	7/1/2009
Optional extra payments	$ -

	Loan summary
Scheduled payment	$ 3,903.21
Scheduled number of payments	120
Actual number of payments	120
Total early payments	$ -
Total interest	$ 100,385.32

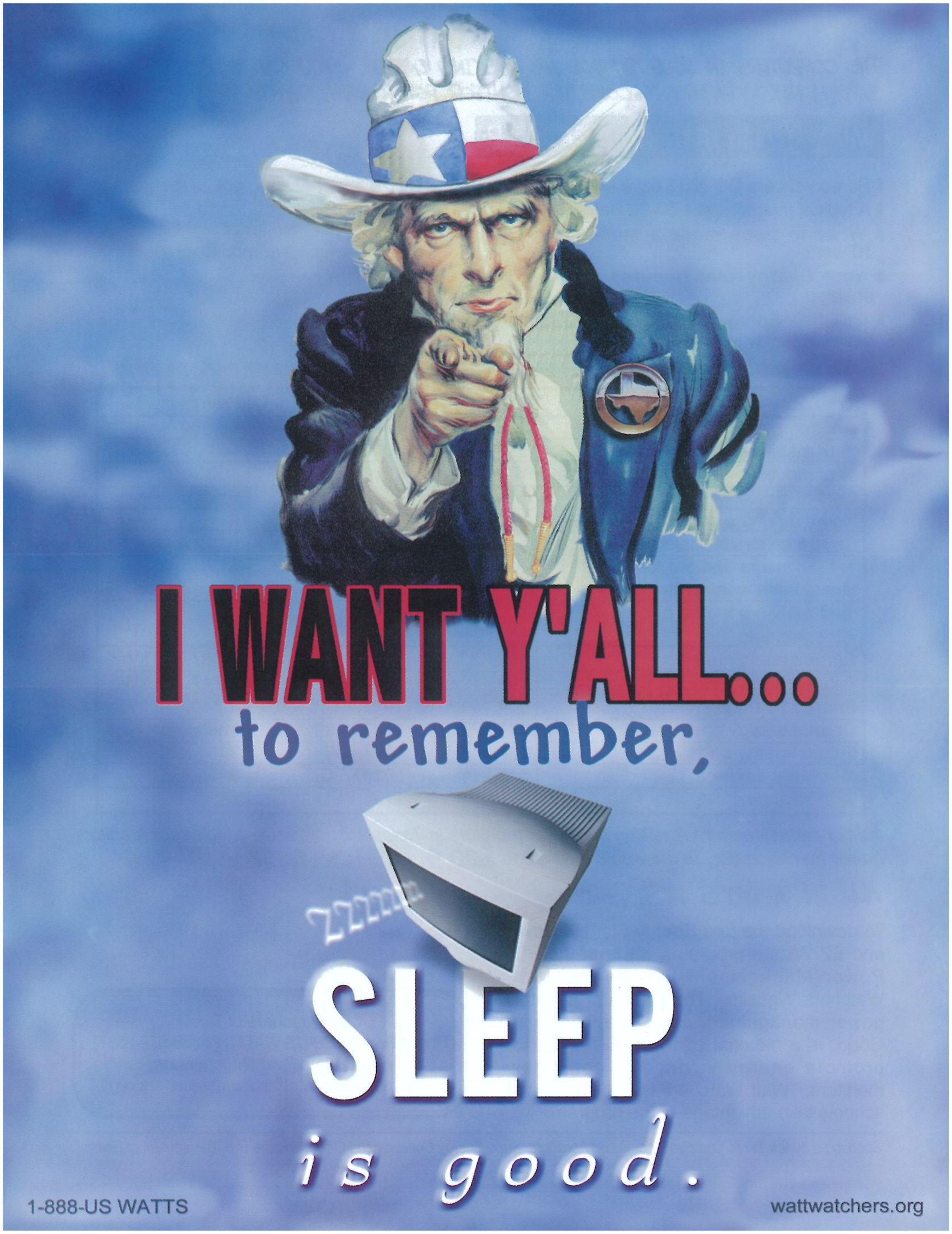
Lender name:

Pmt No.	Payment Date	Beginning Balance	Scheduled Payment	Extra Payment	Total Payment	Principal	Interest	Ending Balance	Cumulative Interest
1	8/1/2009	$ 368,000.00	$ 3,903.21	$ -	$ 3,903.21	$ 2,369.88	$ 1,533.33	$ 365,630.12	$ 1,533.33
2	9/1/2009	365,630.12	3,903.21	-	3,903.21	2,379.75	1,523.46	363,250.37	3,056.79
3	10/1/2009	363,250.37	3,903.21	-	3,903.21	2,389.67	1,513.54	360,860.70	4,570.34
4	11/1/2009	360,860.70	3,903.21	-	3,903.21	2,399.62	1,503.59	358,461.08	6,073.92
5	12/1/2009	358,461.08	3,903.21	-	3,903.21	2,409.62	1,493.59	356,051.45	7,567.51
6	1/1/2010	356,051.45	3,903.21	-	3,903.21	2,419.66	1,483.55	353,631.79	9,051.06
7	2/1/2010	353,631.79	3,903.21	-	3,903.21	2,429.75	1,473.47	351,202.05	10,524.52
8	3/1/2010	351,202.05	3,903.21	-	3,903.21	2,439.87	1,463.34	348,762.18	11,987.86
9	4/1/2010	348,762.18	3,903.21	-	3,903.21	2,450.04	1,453.18	346,312.14	13,441.04
10	5/1/2010	346,312.14	3,903.21	-	3,903.21	2,460.24	1,442.97	343,851.90	14,884.01
11	6/1/2010	343,851.90	3,903.21	-	3,903.21	2,470.49	1,432.72	341,381.40	16,316.72
12	7/1/2010	341,381.40	3,903.21	-	3,903.21	2,480.79	1,422.42	338,900.62	17,739.15
13	8/1/2010	338,900.62	3,903.21	-	3,903.21	2,491.13	1,412.09	336,409.49	19,151.23
14	9/1/2010	336,409.49	3,903.21	-	3,903.21	2,501.50	1,401.71	333,907.99	20,552.94
15	10/1/2010	333,907.99	3,903.21	-	3,903.21	2,511.93	1,391.28	331,396.06	21,944.22
16	11/1/2010	331,396.06	3,903.21	-	3,903.21	2,522.39	1,380.82	328,873.66	23,325.04
17	12/1/2010	328,873.66	3,903.21	-	3,903.21	2,532.90	1,370.31	326,340.76	24,695.35
18	1/1/2011	326,340.76	3,903.21	-	3,903.21	2,543.46	1,359.75	323,797.30	26,055.10
19	2/1/2011	323,797.30	3,903.21	-	3,903.21	2,554.06	1,349.16	321,243.25	27,404.25
20	3/1/2011	321,243.25	3,903.21	-	3,903.21	2,564.70	1,338.51	318,678.55	28,742.77
21	4/1/2011	318,678.55	3,903.21	-	3,903.21	2,575.38	1,327.83	316,103.17	30,070.60
22	5/1/2011	316,103.17	3,903.21	-	3,903.21	2,586.11	1,317.10	313,517.05	31,387.69
23	6/1/2011	313,517.05	3,903.21	-	3,903.21	2,596.89	1,306.32	310,920.16	32,694.01
24	7/1/2011	310,920.16	3,903.21	-	3,903.21	2,607.71	1,295.50	308,312.45	33,989.51
25	8/1/2011	308,312.45	3,903.21	-	3,903.21	2,618.58	1,284.64	305,693.87	35,274.15
26	9/1/2011	305,693.87	3,903.21	-	3,903.21	2,629.49	1,273.72	303,064.39	36,547.87
27	10/1/2011	303,064.39	3,903.21	-	3,903.21	2,640.44	1,262.77	300,423.95	37,810.64
28	11/1/2011	300,423.95	3,903.21	-	3,903.21	2,651.44	1,251.77	297,772.50	39,062.41
29	12/1/2011	297,772.50	3,903.21	-	3,903.21	2,662.49	1,240.72	295,110.01	40,303.13
30	1/1/2012	295,110.01	3,903.21	-	3,903.21	2,673.59	1,229.63	292,436.42	41,532.75
31	2/1/2012	292,436.42	3,903.21	-	3,903.21	2,684.73	1,218.49	289,751.70	42,751.24
32	3/1/2012	289,751.70	3,903.21	-	3,903.21	2,695.91	1,207.30	287,055.78	43,958.54
33	4/1/2012	287,055.78	3,903.21	-	3,903.21	2,707.15	1,196.07	284,348.64	45,154.60
34	5/1/2012	284,348.64	3,903.21	-	3,903.21	2,718.42	1,184.79	281,630.21	46,339.39
35	6/1/2012	281,630.21	3,903.21	-	3,903.21	2,729.75	1,173.46	278,900.46	47,512.85
36	7/1/2012	278,900.46	3,903.21	-	3,903.21	2,741.13	1,162.09	276,159.34	48,674.93
37	8/1/2012	276,159.34	3,903.21	-	3,903.21	2,752.55	1,150.66	273,406.79	49,825.60
38	9/1/2012	273,406.79	3,903.21	-	3,903.21	2,764.02	1,139.19	270,642.77	50,964.79
39	10/1/2012	270,642.77	3,903.21	-	3,903.21	2,775.53	1,127.68	267,867.24	52,092.47
40	11/1/2012	267,867.24	3,903.21	-	3,903.21	2,787.10	1,116.11	265,080.14	53,208.58
41	12/1/2012	265,080.14	3,903.21	-	3,903.21	2,798.71	1,104.50	262,281.43	54,313.08
42	1/1/2013	262,281.43	3,903.21	-	3,903.21	2,810.37	1,092.84	259,471.06	55,405.92
43	2/1/2013	259,471.06	3,903.21	-	3,903.21	2,822.08	1,081.13	256,648.98	56,487.05
44	3/1/2013	256,648.98	3,903.21	-	3,903.21	2,833.84	1,069.37	253,815.14	57,556.42
45	4/1/2013	253,815.14	3,903.21	-	3,903.21	2,845.65	1,057.56	250,969.49	58,613.99
46	5/1/2013	250,969.49	3,903.21	-	3,903.21	2,857.50	1,045.71	248,111.99	59,659.69
47	6/1/2013	248,111.99	3,903.21	-	3,903.21	2,869.41	1,033.80	245,242.58	60,693.49
48	7/1/2013	245,242.58	3,903.21	-	3,903.21	2,881.37	1,021.84	242,361.21	61,715.34
49	8/1/2013	242,361.21	3,903.21	-	3,903.21	2,893.37	1,009.84	239,467.84	62,725.17
50	9/1/2013	239,467.84	3,903.21	-	3,903.21	2,905.43	997.78	236,562.41	63,722.96
51	10/1/2013	236,562.41	3,903.21	-	3,903.21	2,917.53	985.68	233,644.87	64,708.63
52	11/1/2013	233,644.87	3,903.21	-	3,903.21	2,929.69	973.52	230,715.18	65,682.15
53	12/1/2013	230,715.18	3,903.21	-	3,903.21	2,941.90	961.31	227,773.29	66,643.47
54	1/1/2014	227,773.29	3,903.21	-	3,903.21	2,954.16	949.06	224,819.13	67,592.52
55	2/1/2014	224,819.13	3,903.21	-	3,903.21	2,966.46	936.75	221,852.67	68,529.27
56	3/1/2014	221,852.67	3,903.21	-	3,903.21	2,978.82	924.39	218,873.84	69,453.65
57	4/1/2014	218,873.84	3,903.21	-	3,903.21	2,991.24	911.97	215,882.60	70,365.63
58	5/1/2014	215,882.60	3,903.21	-	3,903.21	3,003.70	899.51	212,878.90	71,265.14
59	6/1/2014	212,878.90	3,903.21	-	3,903.21	3,016.22	887.00	209,862.69	72,152.14
60	7/1/2014	209,862.69	3,903.21	-	3,903.21	3,028.78	874.43	206,833.91	73,026.56
61	8/1/2014	206,833.91	3,903.21	-	3,903.21	3,041.40	861.81	203,792.50	73,888.37
62	9/1/2014	203,792.50	3,903.21	-	3,903.21	3,054.08	849.14	200,738.43	74,737.51
63	10/1/2014	200,738.43	3,903.21	-	3,903.21	3,066.80	836.41	197,671.63	75,573.92
64	11/1/2014	197,671.63	3,903.21	-	3,903.21	3,079.58	823.63	194,592.05	76,397.55
65	12/1/2014	194,592.05	3,903.21	-	3,903.21	3,092.41	810.80	191,499.64	77,208.35

Pmt No.	Payment Date	Beginning Balance	Scheduled Payment	Extra Payment	Total Payment	Principal	Interest	Ending Balance	Cumulative Interest
66	1/1/2015	191,499.64	3,903.21	-	3,903.21	3,105.30	797.92	188,394.34	78,006.26
67	2/1/2015	188,394.34	3,903.21	-	3,903.21	3,118.23	784.98	185,276.11	78,791.24
68	3/1/2015	185,276.11	3,903.21	-	3,903.21	3,131.23	771.98	182,144.88	79,563.22
69	4/1/2015	182,144.88	3,903.21	-	3,903.21	3,144.27	758.94	179,000.60	80,322.16
70	5/1/2015	179,000.60	3,903.21	-	3,903.21	3,157.38	745.84	175,843.23	81,068.00
71	6/1/2015	175,843.23	3,903.21	-	3,903.21	3,170.53	732.68	172,672.70	81,800.68
72	7/1/2015	172,672.70	3,903.21	-	3,903.21	3,183.74	719.47	169,488.96	82,520.15
73	8/1/2015	169,488.96	3,903.21	-	3,903.21	3,197.01	706.20	166,291.95	83,226.35
74	9/1/2015	166,291.95	3,903.21	-	3,903.21	3,210.33	692.88	163,081.62	83,919.23
75	10/1/2015	163,081.62	3,903.21	-	3,903.21	3,223.70	679.51	159,857.92	84,598.74
76	11/1/2015	159,857.92	3,903.21	-	3,903.21	3,237.14	666.07	156,620.78	85,264.82
77	12/1/2015	156,620.78	3,903.21	-	3,903.21	3,250.62	652.59	153,370.16	85,917.40
78	1/1/2016	153,370.16	3,903.21	-	3,903.21	3,264.17	639.04	150,105.99	86,556.44
79	2/1/2016	150,105.99	3,903.21	-	3,903.21	3,277.77	625.44	146,828.22	87,181.89
80	3/1/2016	146,828.22	3,903.21	-	3,903.21	3,291.43	611.78	143,536.79	87,793.67
81	4/1/2016	143,536.79	3,903.21	-	3,903.21	3,305.14	598.07	140,231.65	88,391.74
82	5/1/2016	140,231.65	3,903.21	-	3,903.21	3,318.91	584.30	136,912.74	88,976.04
83	6/1/2016	136,912.74	3,903.21	-	3,903.21	3,332.74	570.47	133,580.00	89,546.51
84	7/1/2016	133,580.00	3,903.21	-	3,903.21	3,346.63	556.58	130,233.37	90,103.09
85	8/1/2016	130,233.37	3,903.21	-	3,903.21	3,360.57	542.64	126,872.80	90,645.73
86	9/1/2016	126,872.80	3,903.21	-	3,903.21	3,374.57	528.64	123,498.22	91,174.37
87	10/1/2016	123,498.22	3,903.21	-	3,903.21	3,388.64	514.58	120,109.59	91,688.94
88	11/1/2016	120,109.59	3,903.21	-	3,903.21	3,402.75	500.46	116,706.84	92,189.40
89	12/1/2016	116,706.84	3,903.21	-	3,903.21	3,416.93	486.28	113,289.90	92,675.68
90	1/1/2017	113,289.90	3,903.21	-	3,903.21	3,431.17	472.04	109,858.73	93,147.72
91	2/1/2017	109,858.73	3,903.21	-	3,903.21	3,445.47	457.74	106,413.27	93,605.46
92	3/1/2017	106,413.27	3,903.21	-	3,903.21	3,459.82	443.39	102,953.44	94,048.85
93	4/1/2017	102,953.44	3,903.21	-	3,903.21	3,474.24	428.97	99,479.21	94,477.83
94	5/1/2017	99,479.21	3,903.21	-	3,903.21	3,488.71	414.50	95,990.49	94,892.32
95	6/1/2017	95,990.49	3,903.21	-	3,903.21	3,503.25	399.96	92,487.24	95,292.28
96	7/1/2017	92,487.24	3,903.21	-	3,903.21	3,517.85	385.36	88,969.39	95,677.65
97	8/1/2017	88,969.39	3,903.21	-	3,903.21	3,532.51	370.71	85,436.89	96,048.35
98	9/1/2017	85,436.89	3,903.21	-	3,903.21	3,547.22	355.99	81,889.66	96,404.34
99	10/1/2017	81,889.66	3,903.21	-	3,903.21	3,562.00	341.21	78,327.66	96,745.55
100	11/1/2017	78,327.66	3,903.21	-	3,903.21	3,576.85	326.37	74,750.82	97,071.91
101	12/1/2017	74,750.82	3,903.21	-	3,903.21	3,591.75	311.46	71,159.07	97,383.37
102	1/1/2018	71,159.07	3,903.21	-	3,903.21	3,606.71	296.50	67,552.35	97,679.87
103	2/1/2018	67,552.35	3,903.21	-	3,903.21	3,621.74	281.47	63,930.61	97,961.34
104	3/1/2018	63,930.61	3,903.21	-	3,903.21	3,636.83	266.38	60,293.77	98,227.71
105	4/1/2018	60,293.77	3,903.21	-	3,903.21	3,651.99	251.22	56,641.79	98,478.94
106	5/1/2018	56,641.79	3,903.21	-	3,903.21	3,667.20	236.01	52,974.58	98,714.95
107	6/1/2018	52,974.58	3,903.21	-	3,903.21	3,682.48	220.73	49,292.10	98,935.67
108	7/1/2018	49,292.10	3,903.21	-	3,903.21	3,697.83	205.38	45,594.27	99,141.06
109	8/1/2018	45,594.27	3,903.21	-	3,903.21	3,713.23	189.98	41,881.04	99,331.03
110	9/1/2018	41,881.04	3,903.21	-	3,903.21	3,728.71	174.50	38,152.33	99,505.54
111	10/1/2018	38,152.33	3,903.21	-	3,903.21	3,744.24	158.97	34,408.09	99,664.51
112	11/1/2018	34,408.09	3,903.21	-	3,903.21	3,759.84	143.37	30,648.25	99,807.87
113	12/1/2018	30,648.25	3,903.21	-	3,903.21	3,775.51	127.70	26,872.74	99,935.57
114	1/1/2019	26,872.74	3,903.21	-	3,903.21	3,791.24	111.97	23,081.49	100,047.54
115	2/1/2019	23,081.49	3,903.21	-	3,903.21	3,807.04	96.17	19,274.46	100,143.72
116	3/1/2019	19,274.46	3,903.21	-	3,903.21	3,822.90	80.31	15,451.56	100,224.03
117	4/1/2019	15,451.56	3,903.21	-	3,903.21	3,838.83	64.38	11,612.73	100,288.41
118	5/1/2019	11,612.73	3,903.21	-	3,903.21	3,854.82	48.39	7,757.90	100,336.79
119	6/1/2019	7,757.90	3,903.21	-	3,903.21	3,870.89	32.32	3,887.02	100,369.12
120	7/1/2019	3,887.02	3,903.21	-	3,887.02	3,870.82	16.20	0.00	100,385.32

APPENDIX VII

SECO PROGRAM CONTACTS
WATT WATCHERS OF TEXAS


I WANT Y'ALL...
to remember,
Zzzzzz
SLEEP
is good.
1-888-US WATTS
wattwatchers.org

THE COMPUTERS IN YOUR SCHOOL ARE WASTING ENERGY. YOU CAN HELP YOUR SCHOOL SAVE MONEY. IMPLEMENT COMPUTER MONITOR POWER MANAGEMENT.

WHAT Y'ALL NEED TO REMEMBER:

- Screen savers **DO NOT** save energy!
- A typical monitor uses 60-90 watts
- While in sleep mode a monitor uses 2-10 watts
- Your Energy Star features may not be enabled
- Use free Energy Star software to capture savings
- Utilize your network, put all monitors to sleep at once
- Turn off your monitor at night
- Save energy, save money, prevent pollution

SOME ACTUAL EXAMPLES FROM DISTRICTS THAT ALREADY SET THEIR MONITORS TO SLEEP:

	District A	District B	District C
# of computers	3,000	10,000	15,000
% of monitors enabled	55	0	50
% of monitors enabled after mandate	100	100	100
Cost of electricity	7.5¢	5.8¢	6.0¢
Hours monitors are used per week	9	9	9
Days monitors are used per week	5	5	5
% of monitors that are turned off at night and weekends	35	35	35
% of monitors turned off after mandate	65	65	65
Current energy use	953,620 kWh	5,522,790 kWh	5,087,745 kWh
Future energy use	349,479 kWh	1,164,930 kWh	1,747,395 kWh
Energy savings	**604,141 kWh**	**4,357,860 kWh**	**3,340,350 kWh**
Current energy costs	$71,522	$320,322	$305,265
Future energy costs	$26,211	$67,566	$104,844
Monetary savings	**$45,311**	**$252,756**	**$200,421**
% of savings	63	79	65

If all of the estimated 1.2 million computer monitors in Texas schools were enabled for monitor power management, Texas would save up to **$20.5 MILLION EACH YEAR!**

ALL IN A DAY'S REST...

To download the free Energy Star EZ Save and EZ Wizard programs, click on the PC Power Management link on the Watt Watchers Website. The computer monitor power management campaign, Sleep is Good, is a national effort by EPA/DOE to promote energy savings in computer monitors. Watt Watchers is helping Texas schools take advantage of the program.

Watt Watchers of Texas
Phone/Fax 1-888-US WATTS (1-888-879-2887)
e-mail info@wattwatchers.org
Visit our website http://wattwatchers.org

Sponsored by the Texas Comptroller of Public Accounts, State Energy Conservation Office, and the U.S. Department of Energy.


I WANT Y'ALL
FOR WATT WATCHERS
1-888 US WATTS
wattwatchers.org
SPONSORED BY THE TEXAS STATE ENERGY CONSERVATION OFFICE

-IT'S FREE!-IT'S SIMPLE!-IT WORKS!-

START YOUR PROGRAM TODAY!

Watt Watchers of Texas is a FREE energy efficiency program for Texas schools sponsored by the Texas Comptroller of Public Accounts, State Energy Conservation Office, and the U.S. Department of Energy. The program is designed to help school districts save energy and money by getting students involved. It is simple and effective! Students patrol the halls of the schools reducing energy waste by turning off lights and leaving "tickets" for empty classrooms with the lights on. Turning out the lights in a classroom during two unoccupied hours per day (lunch & after school) can save $50 over a school year.

GET STARTED

Sign up for a free kit. Call 1-888-USWATTS or go on-line at http://wattwatchers.org to enroll. You will receive a free kit which includes a set of 4 Watt Watchers binders, 4 name badges and 4 name tags with 4 lanyards, 4 pencils, a complete instruction manual on CD-ROM, plus a supply of forms, sample tickets and thank you notes. Everything you need — open your kit and get started today! Not only will your school be provided with all of the materials listed above (approximately a $25 value), Watt Watchers will provide free support for the program, including:

- *WATTS NEWS* — Quarterly 20 page Newspaper
- Toll Free Phone & Toll Free Fax support line
- Website and e-mail support
- E-Mail Update – Monthly news for Watt Watchers
- Workshops – Watt Watchers sponsors regional workshops
- Conferences – Watt Watchers attends educational conferences – see you there.
- CD-ROM with all the materials – 0ver 450MB!
- Five Year Lapel Pins for dedicated Watt Watchers sponsors
- Watt Watchers Certificates for participation and Zero Hero Awards

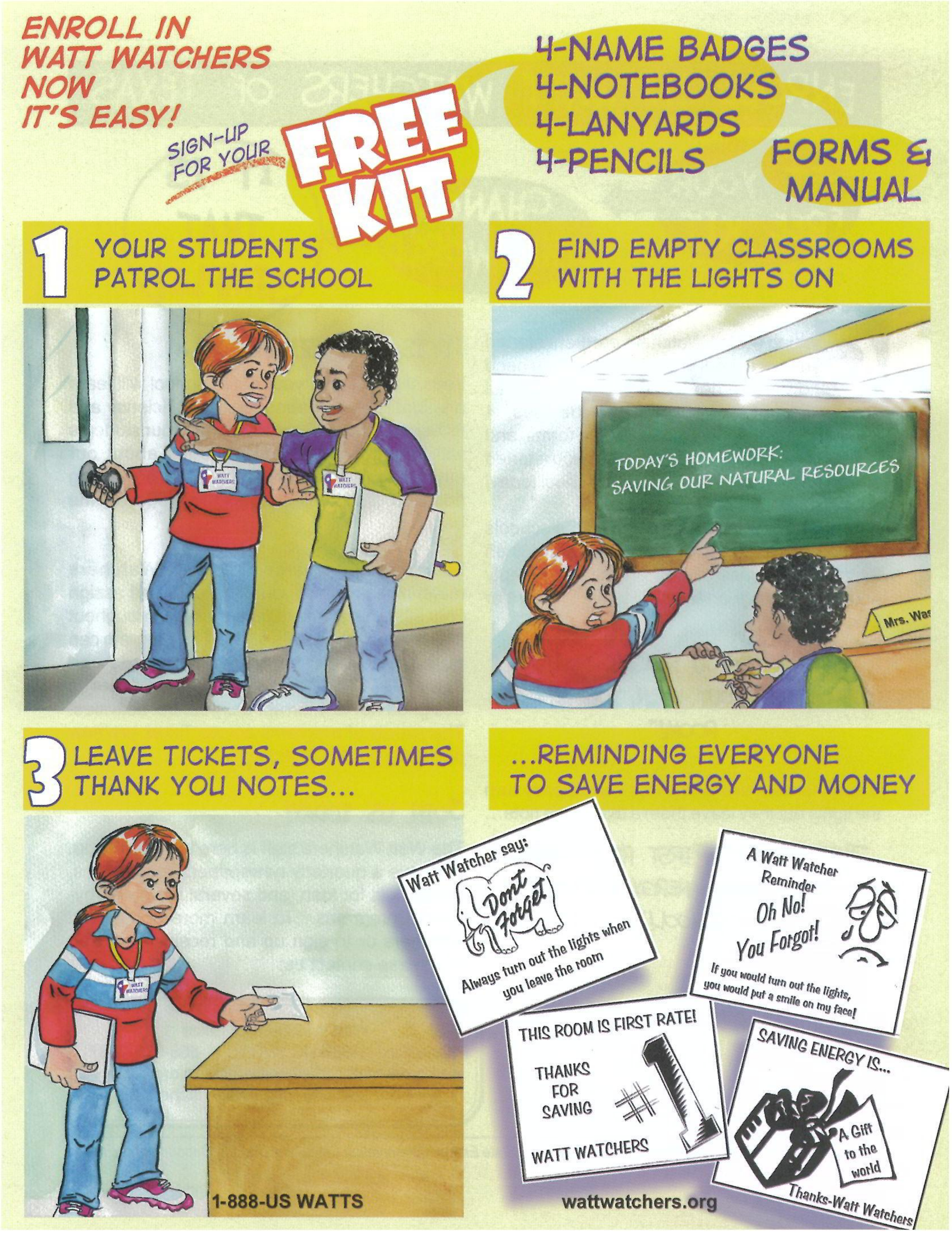
BUT THAT'S NOT ALL, Y'ALL!

In addition to student energy patrols that find waste and raise awareness, Watt Watchers also has additional programs for your school:

- Traveling Energy Exploration Stations – free loans of hands-on kits for classes
- Knowledge is Power – an energy efficiency curriculum supplement
- Sleep Is Good – a computer monitor power management program
- Junior Solar Sprint – a model solar race car project
- Energy Encounter – a one day workshop for high school students
- District Energy Council – students assisting energy managers
- The Weatherization Project – a residential community energy project
- Benchmarking – compare your school district energy use nationally

Watt Watchers of Texas
Phone/Fax 1-888-US WATTS (1-888-879-2887)
e-mail info@wattwatchers.org
Visit our website http://wattwatchers.org

Sponsored by the Texas Comptroller of Public Accounts, State Energy Conservation Office, and the U.S. Department of Energy.


ENROLL IN
WATT WATCHERS
NOW
IT'S EASY!
SIGN-UP
FOR YOUR
FREE
KIT
4-NAME BADGES
4-NOTEBOOKS
4-LANYARDS
4-PENCILS
FORMS &
MANUAL
1 YOUR STUDENTS
PATROL THE SCHOOL
2 FIND EMPTY CLASSROOMS
WITH THE LIGHTS ON
TODAY'S HOMEWORK:
SAVING OUR NATURAL RESOURCES
3 LEAVE TICKETS, SOMETIMES
THANK YOU NOTES...
...REMINDING EVERYONE
TO SAVE ENERGY AND MONEY
Watt Watcher say:
Don't Forget
Always turn out the lights when
you leave the room
A Watt Watcher
Reminder
Oh No!
You Forgot!
If you would turn out the lights,
you would put a smile on my face!
THIS ROOM IS FIRST RATE!
THANKS
FOR
SAVING
#1
WATT WATCHERS
SAVING ENERGY IS...
A Gift
to the
world
Thanks-Watt Watchers
1-888-US WATTS
wattwatchers.org

ENROLL IN WATT WATCHERS OF TEXAS

Getting a Watt Watchers program started in your school is so simple. All you need to do is order the FREE kit! Your kit comes complete with 4 name badges, 4 lanyards, 4 notebooks, 4 pencils, the forms, and a CD-ROM with a manual to get you started saving energy and money for your school today!

Your students will patrol the halls of the schools to see where energy is being wasted. When they locate a classroom or office that is empty and the lights are on they will leave a reminder ticket …

"OH, NO –YOU FORGOT TO TURN YOUR LIGHTS OUT WHEN YOU LEFT THE ROOM!"

If they notice classrooms that consistently turn the lights out they leave them a thank-you note…

"THIS ROOM IS FIRST RATE –THANKS FOR SAVING ENERGY FOR OUR SCHOOL!"

IT IS THAT SIMPLE.

Your students and your entire school will learn a valuable lesson about energy efficiency and its benefits that will last a lifetime. Your students will change habits and attitudes about our environment while saving money and preventing pollution. You will change the world for the better.

Teachers, just place the Watt Watchers materials in a bin at your front door and assign your students a time to go on patrols throughout the day and the work is done. The program can be adapted to fit your teaching needs and demands. The Watt Watchers program is designed not to interrupt daily school activities. Thousands of programs across Texas are now patrolling quickly and quietly.

JOIN US TODAY!

The Watt Watchers staff is here to support you. We have a quarterly newspaper, lesson plans, energy kits for loan, and several more energy-related programs. To learn more about Watt Watchers or to sign up and receive your free kit, please contact us:

Watt Watchers of Texas
Phone/Fax 1-888-US WATTS (1-888-879-2887)
e-mail info@wattwatchers.org
Visit our website http://wattwatchers.org

Sponsored by the Texas Comptroller of Public Accounts, State Energy Conservation Office, and the U.S. Department of Energy

APPENDIX VIII

TEXAS ENERGY MANAGERS ASSOCIATION (TEMA)

ANNOUNCING!

TEMA

TEXAS ENERGY MANAGERS ASSOCIATION

A PROFESSIONAL ASSOCIATION FOR THOSE RESPONSIBLE FOR ENERGY MANAGEMENT IN TEXAS PUBLIC FACILITIES

- Networking
- Sharing Knowledge and Resources
- Training Workshops
- Regional Meetings
- Annual Conference
- Certification
- Legislative Updates
- Money-Saving Opportunities

WWW.TEXASEMA.ORG

Check the website for Membership and Association information.

Texas Energy Managers Association

SECO State Energy Conservation Office

APPENDIX IX

UTILITY CHARTS ON DISKETTE